IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (previously presented) A cache control method in a computer system that includes a storage device having a plurality of physical devices for storing data, at least one client, a relay device which relays data between said storage device and the at least one client, said relay device including a cache disk module for caching processed data being relayed between said storage device and said at least one client, and a network for connecting said storage device, said at least one client and said relay device to each other, the cache control method comprising:

relating data processed in the computer system with attribute data which configures a caching operation of the cache disk module that caches the processed data on the network; and

mediating the processed data between the storage device and the at least one client device via the network without the caching operation of the cache disk module when the attribute data prohibits the caching operation,

wherein a plurality of virtual volumes are formed on said physical device, and each of said at least one client is assigned at least one of said virtual volumes,

wherein said attribute data is held in a cache attribute management table which stores a plurality of entries each of which sets a corresponding relation between identification information identifying one of said virtual volumes, identification information identifying one of said physical devices

forming a part of said one of said virtual volumes and an indication whether data stored in said one of said physical devices is cacheable or not, and

wherein said each entry of said cache attribute management table further sets a corresponding relation between an indication as to whether data to be read from a physical device forming part of said one of said virtual volumes is cacheable or not and an indication as to whether data to be written to said physical device forming part of said one of said virtual volumes is cacheable or not.

2. (previously presented) The cache control method according to claim 1, further comprising encrypting the processed data cached in the cache disk module.

3. (previously presented) A relay device that includes a cache disk module for caching data being relayed between a storage device having a plurality of physical devices for storing data, and at least one client, wherein a network connects said storage device, said at least one client and said relay device to each other and said relay device relays data between said storage device and said at least one client, the relay device comprising:

an obtaining unit that obtains attribute data related with data processed by the at least one client device, wherein the attribute data configures a caching operation of the cache disk module that caches the processed data on the network; and

a mediating unit that mediates the processed data between the storage device and the at least one client device via the network without the caching

operation of the cache disk module when the attribute data prohibits the caching operation,

wherein a plurality of virtual volumes are formed on said physical devices, and each of said at least one client is assigned at least one of said virtual volumes,

wherein said attribute data is held in a cache attribute management table which stores a plurality of entries each of which sets a corresponding relation between identification information identifying one of said virtual volumes, identification information identifying one of said physical devices forming a part of said one of said virtual volumes and an indication whether data stored in said one of said physical devices is cacheable or not, and

wherein said each entry of said cache attribute management table further sets a corresponding relation between an indication as to whether data to be read from a physical device forming part of said one of said virtual volumes is cacheable or not and an indication as to whether data to be written to said physical device forming part of said one of said virtual volumes is cacheable or not.

4. (previously presented) A relay device according to claim 3, further comprising:

a volatile memory for the caching, wherein the mediation unit mediates the processed data between the storage device and the at least one client device via the network, by primarily using the volatile memory and secondarily using the cache disk module.

5. (previously presented) A relay device according to claim 4, further comprising:

an encryption unit that encrypts the data cached in the cache disk module of the relay device.

6. (previously presented) The relay device according to claim 5, further comprising:

an encryption obtaining unit that obtains encryption attribute data related with the processed data, wherein the encryption attribute data configures an encrypting operation that encrypts the data cached in the cache disk module; and

an encryption unit that encrypts the data cached in the cache disk module when the encryption attribute data requires the encrypting operation.

7. (previously presented) A relay device according to claim 5, further comprising:

a volatile memory for storing key data used for generating the encrypted data.

8. (previously presented) A relay device according to claim 3, wherein the attribute data is included in the processed data, and the obtaining unit obtains the attribute data from the processed data.

9. (previously presented) A relay device according to claim 3, wherein the attribute data is associated with a data storage block of the

storage device for storing the processed data, and the obtaining unit obtains the associated attribute data from the storage device via the network in advance of mediation by the mediation unit.

10. (previously presented) A relay device according to claim 3, wherein the attribute data is included in error data that notifies an occurrence of an error in the at least one client device, and the obtaining unit obtains the attribute data from the error data, and

wherein switching between caching and not caching of the processed data is conducted when error data is received.

11. (previously presented) A storage device that is connected via a network to at least one client device, and a relay device which relays data between said storage device and the at least one client, said relay device including a cache disk module for caching processed data being relayed between said storage device and said at least one client device, the storage device comprising:

a plurality of physical devices upon which are formed a plurality of virtual volumes for storing data processed by the at least one client device, wherein the processed data is mediated between the at least one client device and the storage device via the network and each of said at least one client is assigned to at least one of said virtual volumes;

a relation unit that relates the processed data with attribute data which configures a caching operation of the cache disk module that caches the processed data on the network; and

a notification unit that notifies the relay device of the attribute data related with the processed data,

wherein said attribute data is held in a cache attribute management table which stores a plurality of entries each of which sets a corresponding relation between identification information identifying one of said virtual volumes, identification information identifying one of said physical devices forming a part of said one of said virtual volumes and an indication whether data stored in said one of said physical devices is cacheable or not, and

wherein said each entry of said cache attribute management table further sets a corresponding relation between an indication as to whether data to be read from a physical device forming part of said one of said virtual volumes is cacheable or not and an indication as to whether data to be written to said physical device forming part of said one of said virtual volumes is cacheable or not.

12. (previously presented) A storage device according to claim 11, wherein the relation unit comprises:

an additional module that adds the attribute data to the processed data, and the added attribute data is mediated together with the processed data.

13. (previously presented) A storage device according/to claim 11, wherein the attribute data is associated with a data storage block of the storage device, and the notification unit notifies the relay device of the associated attribute data in advance of mediation of the processed data.

14. (previously presented) A storage device according to claim 11, wherein the storage device further comprises:

a key data management unit that manages key data used for encrypting the data cached in the cache disk module of said relay device; and

a key notification module that notifies the relay device of the managed key data.

Claims 15-18 (canceled).

19. (currently amended)A computer readable recording medium in which a computer program is recorded, the computer program causing a computer to control operations of a relay device which relays data between a storage device and at least one client, said relay device includes a cache disk module for caching data being relayed between the storage device having a plurality of physical devices for storing data, and the at least one client, the computer program when executed causes the relay device to perform the functions of:

obtaining attribute data related with data processed by the at least one client device, wherein the attribute data configures, a caching operation of the cache disk module that caches the processed data on the network; and

mediating the processed data between the storage device and the at least one client device via ~~the~~ a network without the caching operation of the cache disk module when the attribute data prohibits the caching operation,

wherein a plurality of virtual volumes are formed on said physical devices, and each of said at least one client is assigned at least one of said virtual volumes,

wherein said attribute data is held in a cache attribute management table which stores a plurality of entries each of which sets a corresponding relation between identification information identifying one of said virtual volumes, identification information identifying one of said physical devices forming a part of said one of said virtual volumes and an indication whether data stored in said one of said physical devices is cacheable or not, and

wherein said each entry of said cache attribute management table further sets a corresponding relation between an indication as to whether data to be read from a physical device forming part of said one of said virtual volumes is cacheable or not and an indication as to whether data to be written to said physical device forming part of said one of said virtual volumes is cacheable or not.